

Laundry-to-Landscape Graywater System



Operation & Maintenance Manual

This manual is to remain with your home throughout the life of your laundry-to-landscape graywater system. In the event of a change of ownership or occupancy, the new owner or tenant must be informed that a graywater system is in place.



HOW TO USE THIS MANUAL

Your laundry-to-landscape graywater system uses wastewater from your washing machine to irrigate your landscape. Reusing graywater saves our limited potable water resources. Laundry-to-landscape graywater systems are easy to construct from off-the-shelf plumbing and irrigation parts, and require minimal (but regular!) maintenance. This manual documents the design and operation/maintenance procedures for your system. It should be placed in an easy-to-find location (e.g. in a plastic sleeve taped on the side of your washing machine).

MANUAL OUTLINE

1. Laundry-to-landscape graywater system schematic
2. Laundry-to-landscape parts list
3. Operations and maintenance procedures
 - a. Turning the system on and off
 - b. What laundry detergents are safe to use?
 - c. Flushing the system
 - d. Checking for leaks
 - e. Maintaining mulch basins
 - f. General design principles to follow if you make changes to your system
4. Required attachments (Graywater Irrigation Field Sizing Worksheet & Site Plan)

REQUIRED ATTACHMENTS

Graywater Irrigation Field Sizing Worksheet

This worksheet allows you to determine the correct size of the irrigation field (i.e. mulch basins) for your laundry-to-landscape graywater system, based on your soil type and washing machine discharge. You will also use the worksheet to create a water budget for your landscape to ensure that the graywater produced by your washing machine matches the landscape water need.

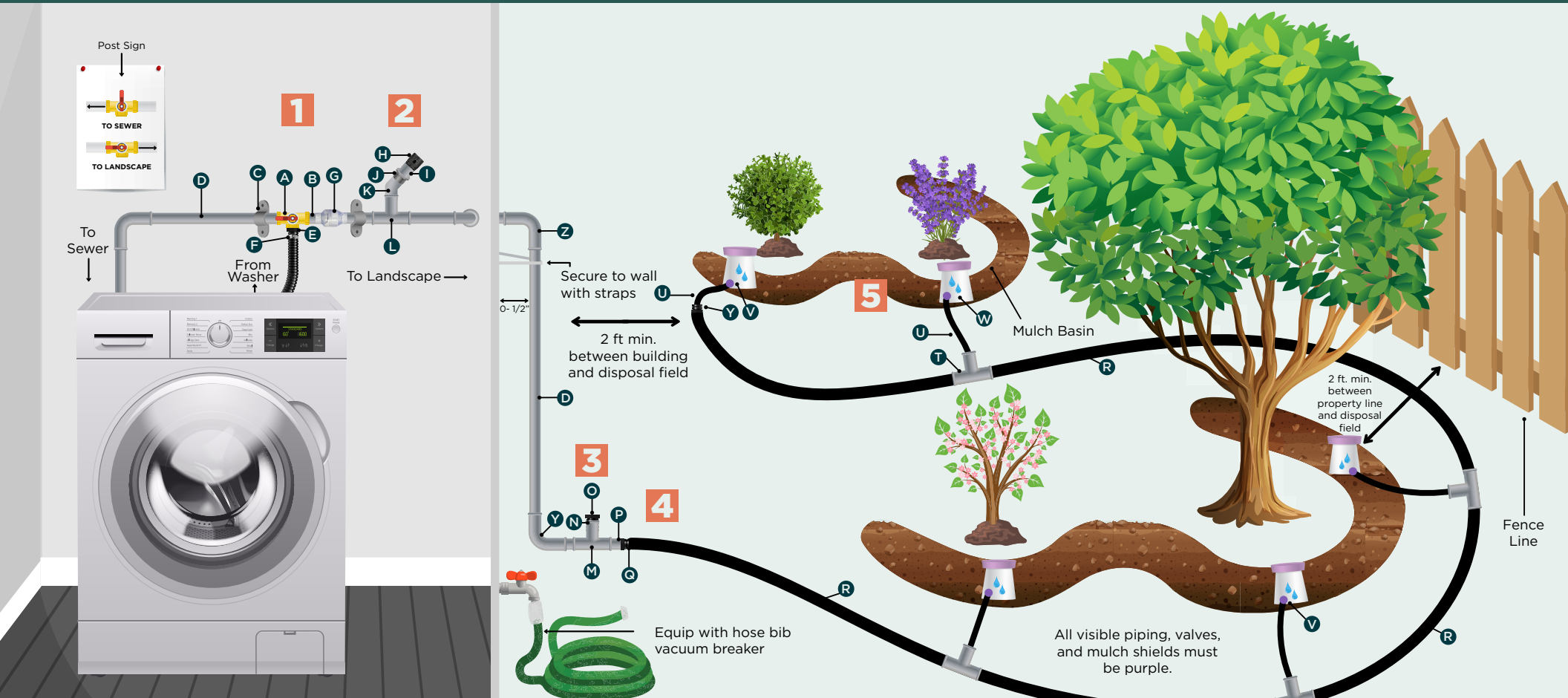
Site Plan

The site plan is an overhead view of your property that documents the layout of the outdoor portion of your laundry-to-landscape graywater system. The site plan does not have to be to scale, but must show dimensions to verify all setbacks from your graywater irrigation field.

Include the following in your site plan:

- Graywater irrigation lines
- Graywater outlets
- Mulch basins
- Property lines (2 ft setback)
- Buildings (2 ft setback)
- Wells (100 ft setback)
- Wastewater disposal field (4 ft setback)
- Potable water lines (10 ft setback)
- Irrigation ditches (25 ft setback)
- Arroyos (25 ft setback)
- Swimming pools (15 ft setback)

Laundry-to-Landscape Graywater System Schematic

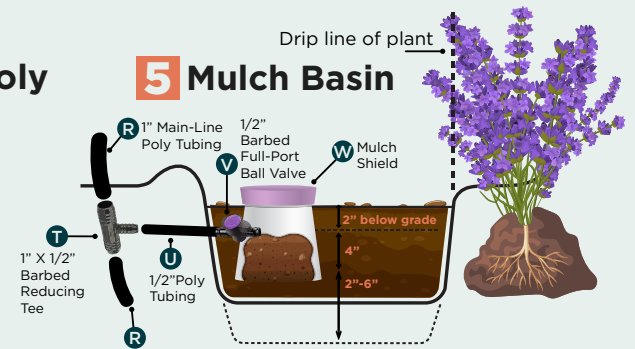
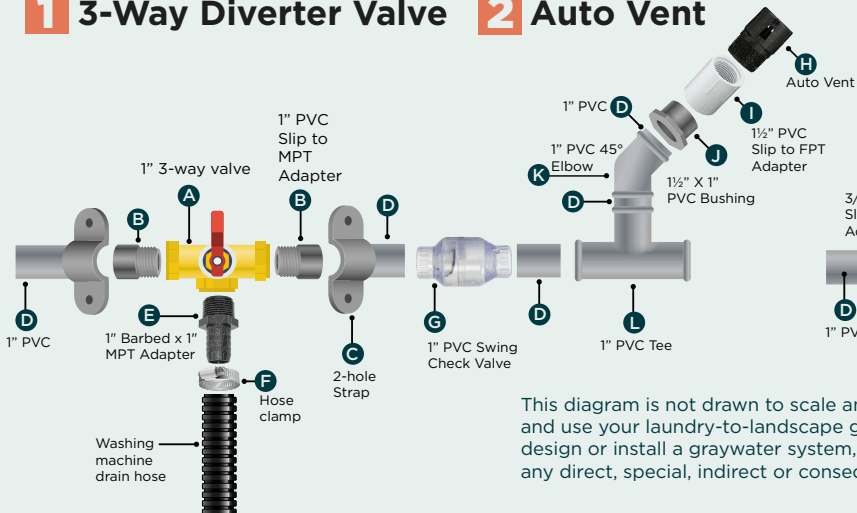


1 3-Way Diverter Valve **2** Auto Vent

3 System Clean-Out

4 Transition to Poly

5 Mulch Basin



This diagram is not drawn to scale and is provided for reference purposes only. It is your responsibility to properly design, install, maintain, and use your laundry-to-landscape graywater system. If you are unsure of the intricacies of your plumbing system or how to properly design or install a graywater system, please consult with a professional. Bernalillo County does not accept any liability or responsibility for any direct, special, indirect or consequential loss or damage whatsoever arising out of or in connection with providing you this diagram.

Laundry-to-Landscape Graywater System Parts List

This handout provides a parts list for the Bernalillo County laundry-to-landscape graywater kit. As each system varies, the system you install may require additional or slightly different parts. This handout is for illustrative purposes only.

1 - Three-Way Diverter Valve Assembly



1" Brass 3-way Valve
Qty: 1

A



1" PVC Slip to MPT
Adapter
Qty: 2

B



2 Hole Straps
Qty: 3

C



1" Schedule 40 PVC
Qty: 10 feet

D



1" Barbed x 1" Male
Pipe Thread
Qty: 1

E

Or



1" x 3/4" PVC
Threaded Bushing
Qty: 1

E-1

&



3/4" Barbed x 3/4" MPT
Adapter
Qty: 1



1/2" x 1 1/4" Hose Clamp
Qty: 4

F



1" PVC Swing
Check Valve
Qty: 1

G

Note: Smaller laundry machine drain hoses may alternatively use E-1 to connect to the diverter valve.

2 - Auto Vent Assembly



1 1/2" Auto Vent
Qty: 1

H



1 1/2" PVC Slip to FPT
Adapter
Qty: 1

I



1 1/2" x 1" PVC Bushing
Qty: 1

J



1" PVC 45°
Elbow
Qty: 1

K



1" PVC Tee
Qty: 1

L



1" x 1" x 3/4" PVC Tee
Qty: 1

M



3/4" PVC Slip to GHT
Adapter
Qty: 1

N



3/4" PVC GHT End Cap
Qty: 1

O

4 - Transition to 1 inch Poly Tubing



1" PVC Slip to FPT
Adapter
Qty: 1

P



1" Barbed x 1" Male Pipe
Thread
Qty: 1

Q



1" Poly Tubing
Qty: 100 ft.

R



1" Garden Staples
Qty: 10

S



1" x 1/2" Barbed
Reducing Tee
Qty: 4

T



1/2" Poly Tubing
Qty: 25 ft.

U



1/2" Barbed Full-Port
Ball Valve
Qty: 4

V



Mulch Shield
(7" Irrigation Valve Box)
Qty: 5

W



1/2" Garden Staples
Qty: 8

X



1" x 1/2" Barbed
Reducing Coupler
Qty: 1

Y

5 - Mulch Basin: Graywater Outlets

6 - Additional Parts and Suggested Tools



1" PVC 90.
Elbow
Qty: 10

Z



PVC Primer and Glue
Not Provided



Silkaflex or Similar
Construction Adhesive
Not Provided



Impact Driver or Screwdriver
Not Provided



Drill with Hole Saw Bit
Not Provided



PVC Cutter or Hacksaw
Not Provided



Screws
Not Provided



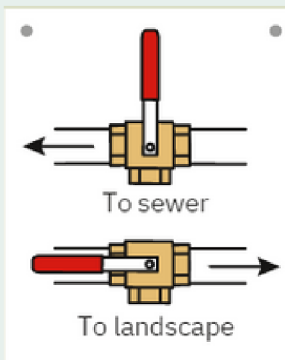
Bubble Level
Not Provided

TURNING THE SYSTEM ON AND OFF

The brass three-way valve controls whether graywater is sent to your landscape or sewer/wastewater system.

Ensure the valve is labeled and a sign is posted indicating the valve orientation.

Always verify graywater is being discharged to the intended area during wash cycles.



When do I turn off my system?

- When washing dirty diapers
- When cleaning anything contaminated with chemicals, such as oily rags
- When using bleach or powder detergents
- During monsoon season if soils are saturated and your plants do not need additional water
- When temperatures are below freezing (32°F)
- If you notice graywater pooling in your yard

WHAT LAUNDRY DETERGENTS ARE SAFE TO USE?

Use plant-friendly laundry products when irrigating your landscape with graywater. All products should be biodegradable and free of boron and salt. Liquid detergents will typically be lower in salts than dry detergents. Also avoid detergents containing bleach, chlorine, sodium perborate, or peroxygen.

If using products that are not suitable for plants, divert graywater to the sewer or wastewater system.

Examples of graywater-safe detergents:

- Oasis
- Purtergent
- Bio Pac
- ECOS
- FIT Organic

Detergent alternatives:

- Soapnuts

CHECKING GRAYWATER OUTLETS

At least once a year at the beginning of the irrigation season, check for even distribution of graywater at outlets. Adjust the ball valves to achieve an even flow across all valves. Clear any debris clogging valves. If needed, flush your graywater system:

1. Open any partially-closed ball valves.
2. Ensure a hose bib vacuum breaker is installed on your hose bib to avoid a cross-connection with your potable water supply.
3. Attach the garden hose to the threaded cleanout valve on your graywater system.
4. Turn on the hose and flush your system.
5. When finished, readjust the ball valves for an even flow of graywater.

CHECKING FOR LEAKS

At least once a year at the beginning of the irrigation season, walk your graywater system and check for leaks:

1. Washing machine drain hose - If leaking, tighten the hose clamp that attaches the drain hose to the three-way valve.
2. Auto-vent assembly - If leaking, replace the auto vent, or disassemble and investigate if debris is hindering proper function.
3. Piping - If leaking, cut out damaged section and replace with new PVC pipe or polytubing.

MAINTAINING MULCH BASINS

Check your mulch basins periodically to make sure graywater is draining properly. Organic mulch decomposes over time. Add mulch to a depth of 4"-6" as needed to maintain drainage and prevent odors. Ensure you maintain the size of your mulch basins as specified in the Laundry-to-Landscape Graywater System Schematic and Graywater Irrigation Field Sizing Worksheet.

IF YOU MAKE CHANGES TO YOUR SYSTEM...

If you make changes to your laundry-to-landscape graywater system, adhere to these general design principles:

- If you buy a new washing machine, recalculate and adjust the size of your irrigation field using the Graywater Irrigation Field Sizing Worksheet.
- The 3-way diverter valve must be installed above the flood rim of your washing machine.
- The auto vent must be installed at the high point of your system & accessible for servicing.
- Keep a downward slope on graywater piping whenever possible.
- In a flat yard, distribution lines should be no more than 100 feet in length.
- If your landscape slopes downward, distribution lines can be as long as necessary. On steep slopes, run distribution lines in a serpentine (s-shaped) pattern to slow the flow of water and prevent blowout in your mulch basins.
- Do not run distribution lines uphill as you will damage your washing machine pump.
- Use 1-inch PVC pipe and main-line poly tubing.
- Graywater must be discharged under a mulch shield.
- Use graywater on ornamental plants and fruit/nut trees, but not on other food crops.
- Bernalillo County residents can take or retake the online, self-paced "Laundry-to-Landscape Graywater for Homeowners" training at no charge to ensure their system is properly constructed and complies with the Bernalillo County Wastewater Systems Ordinance.

For more information, go to bernco.gov/graywater